ABSTRACT OF THE DISCLOSURE

The present inventors have discovered that antisense suppression of a chlorophyll synthase (CS) gene results in plants exhibiting one or more of chlorosis, reduced growth, and altered development. Thus, the present inventors have discovered that the protein encoded by the CS gene is essential for normal plant growth and development, and is useful as a target for the identification of compounds as antibiotics and herbicides, especially herbicides. The present invention is directed to methods for identifying inhibitors of a CS enzyme by incubating a CS polypeptide with a chlorophyllide and a phopholipid substrate in the presence and absence of a test compound under conditions suitable for the CS enzyme activity, adding a solution to the incubation reactions comprising a water immiscible organic solvent, a water-soluble alcohol, and a water-soluble dye that absorbs in the range of one or both the excitation and emission wavelength ranges of the chlorophyllide substrate, and measuring the fluorescence of the incubation reactions at from about 650 to 750nm, using from about 425 to 445nm as excitation wavelength, wherein a decrease in the fluorescence in the presence of the test compound indicates that the compound is a CS inhibitor.